P 00/001
Form 1
Regulation 9

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

APPLICATION FOR A STANDARD PATENT OR A STANDARD PATENT OF ADDITION

Insert full name(s) of applicant(s)
Insert address(es) of applicant(s)

(71) I/We MICHAEL JOHN COTTERILL
of 43 ROCKLEA CRESCENT SYLVANIA HTS 2224

Insert title of invention

(54) hereby apply for the grant of a ☒ standard patent ☐ patent of addition for an invention entitled .....

(Tick appropriate box)

which is described in the accompanying ☒ provisional ☐ complete specification.

Insert name of actual inventor

(72) The actual inventor(s) of the said invention is/are MICHAEL JOHN COTTERILL

Insert address for service of notices in Australia

(74) My/our address for service is 43 ROCKLEA CRESCENT SYLVANIA HTS
Attorney Code.....

THESE SECTIONS ARE ONLY TO BE COMPLETED WHERE APPLICABLE:

For Convention applications only

(Only to be used in the case of a Convention application)
Details of basic application(s):-

(31) NUMBER	(33) COUNTRY	ISO CODE	(32) DATE OF APPLICATION

For further applications only

(Only to be used in the case of a further application made by virtue of Section 51)

(62) Number of original application.....

Person by whom made.....

For patents of addition only

(Only to be used in the case of an application for a patent of addition)

I request that the patent may be granted as a patent of addition applied for on

(61) Application No..... Patent No.....

in the name of.....

I request that the term of the patent of addition be the same as that for the main invention or so much of the term of the patent for the main invention as is unexpired.

Insert day, month and year form signed

Dated this 18TH day of AUGUST 19 88

S001071 18/07/88

Signature of applicant or Australian attorney

M. J. Cotterill
(Signature)

TO: THE COMMISSIONER OF PATENTS

This form must be accompanied by either a provisional specification (Form 9 and true copy) or by a complete specification (Form 10 and true copy).

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P 00 001
Form 1
Regulation 9

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

APPLICATION FOR A STANDARD PATENT OR A STANDARD PATENT OF ADDITION

Insert full name(s) of applicant(s)

(71) I/We.....

Insert address(es) of applicant(s)

of.....

Insert title of invention

(54) hereby apply for the grant of a ☐ standard patent ☐ patent of addition for an invention entitled.....

.....

(Tick appropriate box)

which is described in the accompanying ☐ provisional ☐ complete specification.

Insert name of actual inventor

(72) The actual inventor(s) of the said invention is/are.....

.....

Insert address for service of notices in Australia

(74) My/our address for service is.....

.....Attorney Code.....

THESE SECTIONS ARE ONLY TO BE COMPLETED WHERE APPLICABLE:

For Convention applications only

(Only to be used in the case of a Convention application)

Details of basic application(s)-

(31) NUMBER	(33) COUNTRY	ISO CODE	(32) DATE OF APPLICATION

For further applications only

(Only to be used in the case of a further application made by virtue of Section 51)

(62) Number of original application.....

Person by whom made.....

For patents of addition only

(Only to be used in the case of an application for a patent of addition)

I request that the patent may be granted as a patent of addition applied for on

(61) Application No..... Patent No.....

in the name of.....

I request that the term of the patent of addition be the same as that for the main invention or so much of the term of the patent for the main invention as is unexpired.

Insert day, month and year form signed

Dated this.....day of.....19.....

500446? 23/12/88

Signature of applicant or Australian attorney

.....

(Signature)

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Form 7
Regulation 12(1)

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

(* Delete if inapplicable)

In support of the Application made by MICHAEL JOHN COTTERILL

for a patent for an invention entitled SLIM FIN-LOCK

I, MICHAEL JOHN COTTERILL

of 43 ROCKLEA CRESCENT SYLVANIA HTS

do solemnly and sincerely declare as follows:-

*1. I am the applicant for the patent. ✓

(or, in the case of an application by a body corporate)

*1. I am authorised by .....
the applicant for the patent to make this declaration on its behalf.

*2. I am the actual inventor of the invention. ✓

(or, where a person other than the inventor is the applicant)

*2. .....

of .....

.....is the actual inventor of the invention and

the facts upon which * I am/* the .....is entitled to make the

application are as follows:- .....

.....

.....

.....

Declared at SYDNEY this 18 TH day of AUGUST 19 88

M. J. Cotterill
(Signature)

To: THE COMMISSIONER OF PATENTS

Printed by R. D. RUBIE, Commonwealth Government Printer, Canberra

P/00 007
Form 7
Regulation 12.11

COMMONWEALTH OF AUSTRALIA

Patents Act 1952

DECLARATION IN SUPPORT OF AN APPLICATION FOR A PATENT

(* Delete if inapplicable)

In support of the Application made by .....

.....

for a patent for an invention entitled .....

.....

I, ...

of .....

do solemnly and sincerely declare as follows:-

*1. I am the applicant for the patent.

(or, in the case of an application by a body corporate)

*1. I am authorised by .....
the applicant for the patent to make this declaration on its behalf.

*2. I am the actual inventor of the invention.

(or, where a person other than the inventor is the applicant)

*2. .....

of .....

.....is the actual inventor of the invention and

the facts upon which * I am/* the .....is entitled to make the

application are as follows:- .....

.....

.....

.....

Declared at .....this .....day of .....19 .....

.....
(Signature)

To: THE COMMISSIONER OF PATENTS

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(12) PATENT ABSTRACT (11) Document No. AU-A-38179/89
(19) AUSTRALIAN PATENT OFFICE

(54) Title
SLIM PIN-LOCK

(51)[4] International Patent Classification(s)
A47B 021/02

(21) Application No. : 38179/89 (22) Application Date : 18.07.88

(23) Filing Date of Complete Specification : 17.07.89

(43) Publication Date : 18.01.90

(60) Related to Provisional(s) : PI9358 ~~PJ0075~~ PJ2086

(71) Applicant(s)
MICHAEL JOHN COTTERILL

(72) Inventor(s)
MICHAEL JOHN COTTERILL

(74) Attorney or Agent
SHELSTON WATERS

(57) Claim

1. A keyboard support apparatus of the kind having a mounting bracket, a support member, at least one linkage bar pivotally connected to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket, and locking means for immobilizing the apparatus against said movement; the locking means comprising a plate mounted to the support member on the side of the linkage bar opposite the support member by means permitting the plate to move laterally towards or away from the support member, a formation of the bar being interengageable with a formation of the plate, and biasing means urging the plate towards the support member.

13. A keyboard support apparatus of the kind having a mounting bracket, a support member, at least one linkage bar pivotally connected to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket, and locking means for immobilizing the apparatus against said movement, the locking means comprising a lever adapted for lateral movement sidewardly towards or away from the support means and adapted to engage or disengage a formation associated with the bar or an extension thereof into or out of engagement with an interengageable formation associated with the support member.

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FORM 10

PATENTS ACT 1952

COMPLETE SPECIFICATION

FOR OFFICE USE:

Class Int.Class

Application Number:
Lodged:

Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

Name of Applicant: MICHAEL JOHN COTTERILL

Address of Applicant: 43 Rocklea Crescent, Sylvania Heights, New South Wales 2224, Australia

Actual Inventor: Michael John Cotterill

Address for Service: SHELSTON WATERS, 55 Clarence Street, Sydney

Complete Specification for the Invention entitled:

"KEYBOARD SUPPORT"

The following statement is a full description of this invention, including the best method of performing it known to me:-

(Complete of PI9358, ~~PJ0075~~ and PJ2086 dated 18th July, 1988, 26th August, 1988 and 22nd December, 1988)

This invention relates to an apparatus suitable, but not exclusively, for use in supporting a processor, typewriter or an electronic keyboard.

In offices, instruments such as electronic keyboards are commonly accessed from desks. However to minimize operator fatigue and encourage proper posture it is desirable to present the instrument to the operator at a suitably elevated position which is ergonomically efficient.

Controls for adjustment of keyboard support elevation should be accessible and convenient for the operator. Desirably adjustment of support elevation could be accomplished with one hand and without risk of damage to long fingernails. The support and elevation adjustment mechanism should be robust and capable of withstanding overload such as a person sitting or leaning on the support. Quick, positive, secure and convenient locking of the support at the desired height would be advantageous.

It would further be desirable to simplify the manufacture and construction of keyboard support apparatus.

Patent 581,471 describes apparatus having a mounting bracket adapted to be secured to a desk, a keyboard support member, linkage bars pivotally mounted to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket and locking means for immobilizing the apparatus against such movement. In described embodiments the locking means is a

clamp assembly whereby the linkage bar is clamped to the support member by a threaded bolt extending through the bar and support member and cooperating with a threaded handle.

That apparatus relies upon the clamping force and friction between the parts for locking and if either is inadequate there is a risk of damage to equipment or injury to the user.

Application 19015/88 describes a similar apparatus in which locking is achieved by means of a pawl which engages a toothed extension of a linkage bar. However the locking mechanism is complex to manufacture and is engaged or disengaged by pulling a handle towards the operator, which is difficult and inconvenient for an operator seated in a "user" position.

Patent application 21786/88 describes a similar apparatus in which the locking mechanism involves engagement of a pin with an aperture of the mounting bracket. The pin may be driven by a bowden cable through a link bar into an aperture of the mounting bracket or may be a part of a lever having a fulcrum on the support member and adapted to engage an aperture of the mounting bracket.

Both forms of this arrangement suffer from a lack of positive engagement as well as difficulty in control. Tolerances required to facilitate locking engagement of the pin and hole result in an unsteady mechanism. The latter form is very susceptible to unintentional

disengagement by an operator knocking the lever.

An object of the present invention is to provide a keyboard support apparatus which avoids at least some of the disadvantages of prior art and/or which meets the desiderata discussed above by more efficient means than prior art.

According to one aspect the invention consists in a keyboard support apparatus of the kind having a mounting bracket, a support member, at least one linkage bar pivotally connected to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket, and locking means for immobilizing the apparatus against said movement; the locking means comprising a plate mounted to the support member on the side of the linkage bar opposite the support member by means permitting the plate to move laterally towards or away from the support member, a formation of the bar being interengageable with a formation of the plate, and biasing means urging the plate towards the support member.

Embodiments of the invention will now be described by way of example only with reference to the accompanying drawing wherein:

Fig. 1 shows schematically a keyboard support apparatus viewed in side elevation in a raised position,

Fig. 2 shows schematically the keyboard support apparatus of Fig. 1 in a lowered position,

Fig. 3 shows schematically the keyboard support apparatus of Fig. 1 viewed from the front.

Fig. 4 shows the apparatus of Fig. 1 in plan viewed from beneath,

Fig. 5 shows in side view a portion of the apparatus of Figs. 1 and 2 equipped with locking means in accordance with the invention,

Fig. 6 shows plate 30 of Fig. 5 in detail,

Fig. 7 shows a section on line A-A of Fig. 5,

Fig. 8 shows a section on line B-B of Fig. 5,

Fig. 9 shows in schematic perspective a second embodiment of the invention,

Fig. 10 shows in more detail a part of Fig. 9.

With reference to figures 1 to 4 there is shown schematically a keyboard support apparatus of the kind under discussion.

A mounting bracket 10 comprises a vertical plate 11 and horizontal flange 12 whereby the mounting bracket may be mounted by fasteners to, for example, the underside of a desk top 13. A support member 14 comprises a vertical plate 15 and a horizontal flange 16 which in use has a keyboard or keyboard supporting platform (not shown) fastened thereto.

A first linkage bar 20 is pivotally connected by means of pivot pin 21 to bracket vertical plate 11 and is pivotally connected by means of pivot pin 22 to vertical plate 15 of support member 14. First linkage bar 20 has an extension 23 beyond pivot pin 22 to an extremity 24.

A second linkage bar 25 is pivotally connected by means of pivot pin 26 to mounting bracket plate 11 and is pivotally connected by means of pivot pin 27 to plate 15 of support member 14. The pivot pins may be rivets or other suitable fasteners and are parallel.

Bars 20 and 25 are parallel and the distance between pivot pins 21,22 corresponds to that between pivot pins 26,27 so that the mounting bracket, support member, first and second bars together constitute a four bar linkage or pantagraph.

The arrangement permits the support member to be swung upwardly or downwardly with respect to the work surface while maintaining a constant inclination of the support member upper surface relative to the plane of the work surface.

In practice as shown in figs. 3 and 4 the parts of the apparatus of Fig. 1 are connected by a box beam 17 to a second corresponding assembly as shown in figs. 3 and 4, corresponding parts being identified by corresponding numerals.

In the past, when the support member was at a required altitude, a bar 25 and the support member 14 were clamped together e.g. by a threaded bolt and cooperating threaded or handle or star wheel, for example by means of a bolt acting as pivot pin 27.

In practice also, there is commonly provided a spring (not illustrated) for assisting raising of the support member relative the mounting bracket.

According to a first preferred embodiment of the present invention there is provided instead, or in addition, a plate 30 (Figs. 5 to 8) made of spring steel and mounted to vertical plate 15 of mounting member 14 by means of pivot pin rivets 22, 27.

Rivet heads 31,32 of pivot pins 22, 27 are most clearly seen in fig. 7. Plate 30 is mounted on the side of bar 20 opposite to mounting member 14 so that the extension 23 of bar 20 is sandwiched with clearance between plate 30 and plate 15.

Plate 30 is shown in fig. 6 and has mounting apertures 34 and 35 and has a plurality of pin engaging apertures or slots 33 which are disposed on an arc, at a predetermined radius from aperture 34. Plate 30 is located by means of apertures 34, 35 on pivot pins 22,27 respectively. Plate 30 has apertures 36 and 37 whereby the plate may be riveted to handle 40.

The outermost side of plate 30 is provided with a lever handle 40 secured to plate 30 by rivets 41,42 extending through handle 40 and apertures 36,37.

Plate 30 is otherwise free.

Because plate 30 is of spring steel, handle 40 acts as a lever having a fulcrum at pin 22 but adapted for lateral movement at its free end sideways towards or away from the plane of plate 15 of support member 14.

Plate 30 is resiliently biased towards a plane parallel to plate 15 but is able to be deformed on line A-A to an angle therefrom. Extension 23 is provided with

a pin 49 which extends laterally (parallel to the axis of pivot pin 25) towards plate 30 and is engageable with a selected one of apertures 33 of plate 30.

Pivot pins 25,27 may be provided with washers 42 as desired.

In use if it is desired to move the support means from a first altitude to a second altitude, lever handle 40 is moved laterally to the side whereby plate 30 is resiliently deformed at the fulcrum line A-A extending through pivot pins 22, 27, plate 30 moving away from bar 20 and support member plate 15. As plate 30 moves away from bar 20, pin 49 is disengaged from apertures 33. The support member may then be raised or lowered as desired. Lever handle 40 may then be released to move plate 30 towards plate 15, allowing pin 49 to engage a selected other hole 33, pin 49 being held in engagement with hole 33 by spring plate 30 which resiliently returns to a position parallel to, and adjacent bar 20.

It will be understood that interengageable formations other than a pin and aperture may be employed. Also if desired two or more pins may engage two or more holes.

A second embodiment of the invention will now be described with reference to figures 9 and 10 wherein parts corresponding to those of Figs. 1-8 are identified by corresponding numerals. In this embodiment pivot pin 22 extends through a slot in bar 20 and a spring 19 acts between bar 20 and pin 22.

With reference to Figures 9 and 10 a collar 53 is stepped to a reduced diameter boss 55 adjacent bar 22 and is thread mounted to the bar. A lever handle 40 is riveted at 51 to a "U" shaped spring steel bracket 52 which is pivotally mounted to bar 22 by means of boss 55 which extends through an apperture of one arm 56 of bracket 52 and retains the arm between collar 53 and bar 22.

A pin 49 extends axially through collar 53 and boss 55. One pin end 58 is tapered and projects through bar 22 to engage in an apperture 54 or slot of plate 15. Pin 49 is reduced in diameter adjacent its other end, the portion of reduced diameter 59 extending successively through an apperture in the other arm 57 of bracket 52 through a slot 60 of lever handle 40, through an "O" ring 61, and terminating at a threaded retaining nut 62.

Lever 40 is thus mounted for pivotal movement about the axis of pin 49 and is moveable laterally by resilient deformation of bracket 52 to withdraw pin 49 from engagement with an apperture of plate 15.

The support member is adjusted to a require altitude relative to the mounting bracket and pin 49 then is engaged with a selected corresponding hole 54, the pin being biased in engagement by pin 51. In another form of this embodiment (not illustrated) bracket 52 is rigid and a compression spring acts axially on pin 41 to urge it into engagement with a selected hole 54.

In preferred embodiments of the invention at least one of bars 20, 25 is, or is associated with, a hollow duct (not illustrated) the duct being adapted to conduct a keyboard cable from a keyboard supported upon support member 14.

The duct may for example be a square section hollow tube welded to bar 20, or bar 20 may itself be of hollow section. The duct should be of sufficiently large internal dimension to enable the plug or socket terminating a keyboard cable to be threaded through the duct. The duct should convey the cable to a location near the leading edge of the rear brackets from where the cable may be connnected to a computer, VDU, etc., as required.

The duct serves to keep the cabling tidy and prevents it from becoming jammed in the mechanism or inadvertently unplugged.

As will be apparent to those skilled in the art from the teaching hereof, the apparatus herein described is simple and relatively inexpensive to manufacture, provides positive engagement or disengagement on locking, is convenient for use by an operator in a seated or "user" position, and is unobtrusive in appearance.

The invention extends to include mechanical equivalents of the principle herein disclosed.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. A keyboard support apparatus of the kind having a mounting bracket, a support member, at least one linkage bar pivotally connected to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket, and locking means for immobilizing the apparatus against said movement; the locking means comprising a plate mounted to the support member on the side of the linkage bar opposite the support member by means permitting the plate to move laterally towards or away from the support member, a formation of the bar being interengageable with a formation of the plate, and biasing means urging the plate towards the support member.

2. Apparatus according to claim 1 wherein a formation of the bar is selectively engageable with one of a plurality of formations of the plate.

3. Apparatus according to claim 1 or claim 2 wherein the formation of the bar is located intermediate the pivotal connection to the mounting bracket and the pivotal connection to the support mount.

4. Apparatus according to claim 1 or claim 2 wherein the formation of the bar is located on an extension projecting beyond the pivotal connection to the mounting bracket.

5. Apparatus according to any one of the preceding claims wherein the plate is mounted to the support member by means permitting hinged movement towards or away from the support member.

6. Apparatus according to any one of claims 1 to 4 wherein the plate is moved towards or away from the support member by resilient deformation.

7. Apparatus according to claim 6 wherein the plate is of spring steel.

8. Apparatus according to any one of the previous claims wherein the plate is provided with a lever facilitating movement towards or away from the support member.

9. Apparatus according to any one of the preceding claims wherein a plurality of formations of the bar engages a plurality of formations of the plate.

10. Apparatus according to any one of the preceding claims wherein the formations of the plate are elongate slots.

11. Apparatus according to any one of the preceding claims further including clamping means for clamping the plate in engagement with the bar.

12. Apparatus substantially as described with reference to Figs. 1-8.

13. A keyboard support apparatus of the kind having a mounting bracket, a support member, at least one linkage bar pivotally connected to the mounting bracket and to the support member whereby the support member is adapted for movement between a raised or lowered position relative to the mounting bracket, and locking means for immobilizing the apparatus against said movement, the locking means comprising a lever adapted for lateral movement sidewardly towards or away from the support means and adapted to

engage or disengage a formation associated with the bar or an extension thereof into or out of engagement with an interengageable formation associated with the support member.

14. Apparatus according to claim 12 wherein the lever is mounted to the bar or an extension of the bar.

15. Apparatus according to claim 11 or 12 wherein the formation associated with the bar is a pin driven by said lever into engagement with a pin receiving aperture or socket of the support member.

16. Apparatus substantially as herein described with reference to Figs. 9 and 10.

17. A keyboard support apparatus according to any one of the preceeding claims having a cable duct associated with a linkage bar.

18. A keyboard support apparatus according to any one of claims 1 - 16 having a linkage bar which is a hollow cable duct.

DATED this 17th Day of July, 1989

MICHAEL JOHN COTTERILL

Attorney: IAN T. ERNST

Fellow Institute of Patent Attorneys of Australia

of SHELSTON WATERS

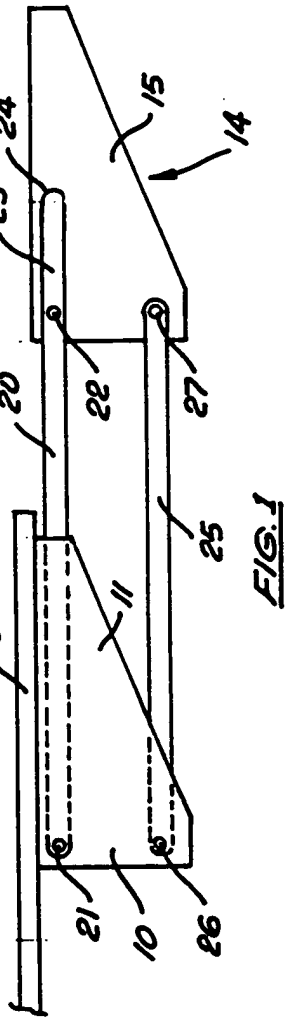

FIG. 1

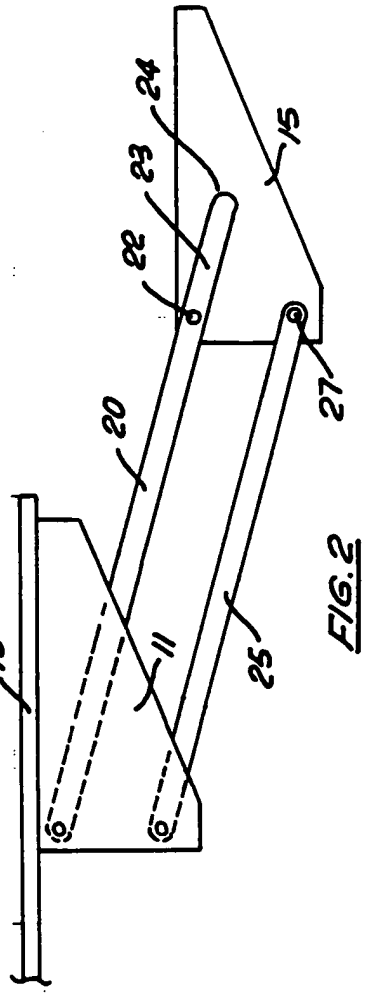

FIG. 2

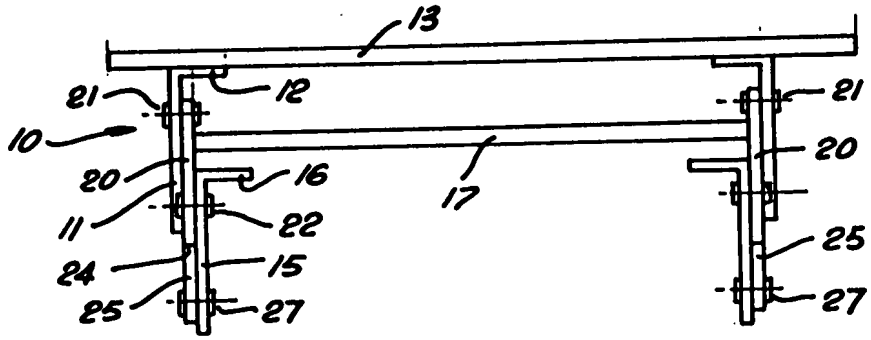

FIG. 3

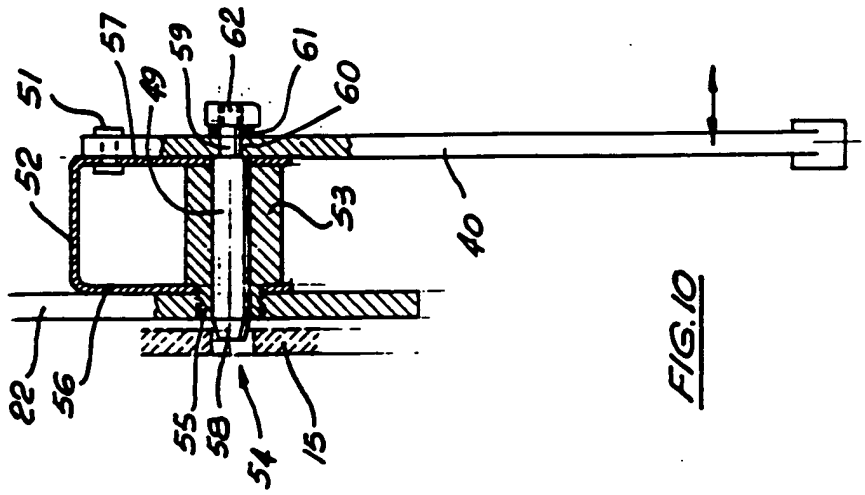
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FIG.10

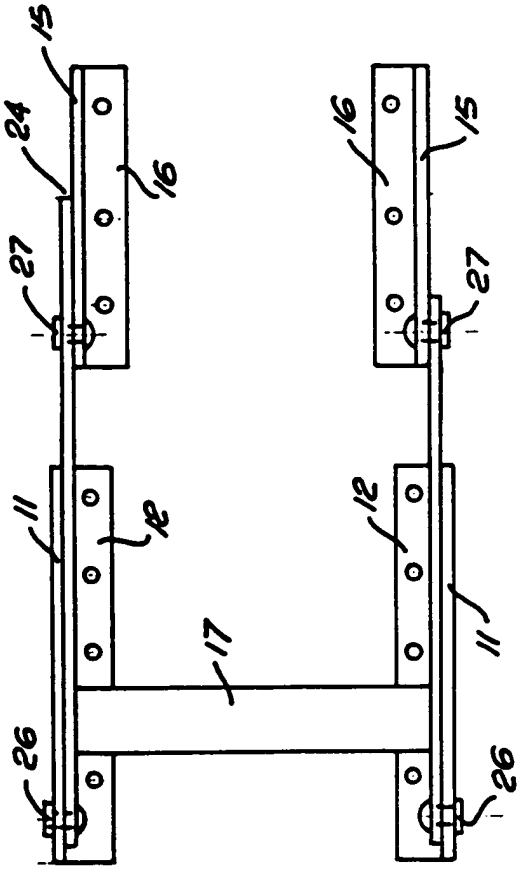
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FIG.4

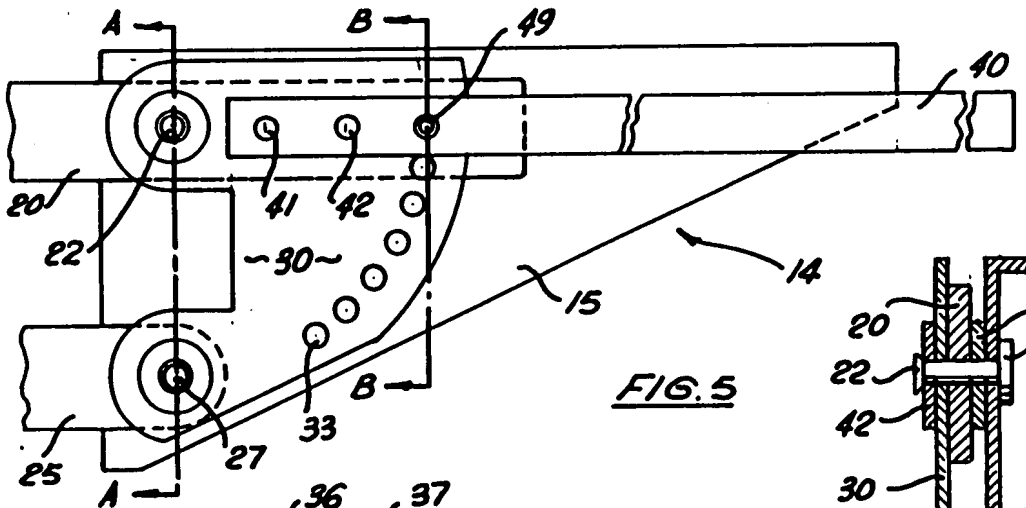

FIG. 5

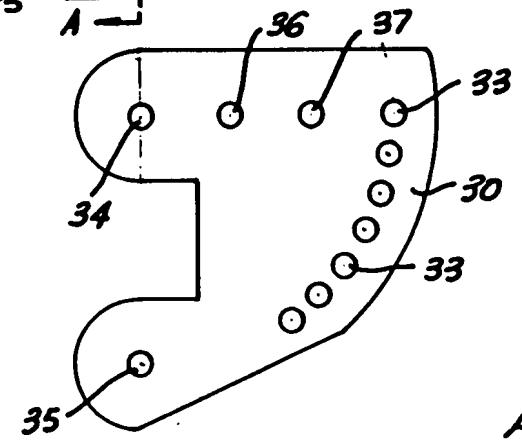

FIG. 6

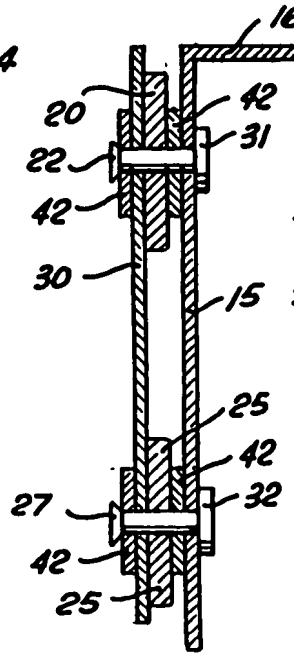

FIG. 7

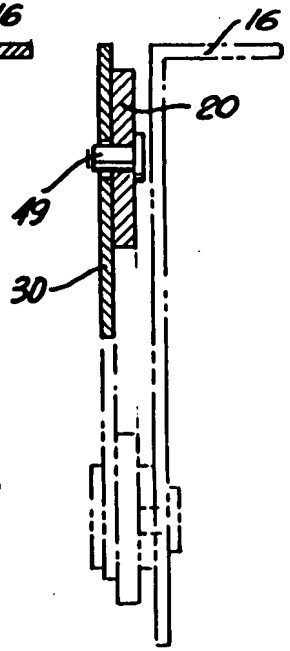

FIG. 8

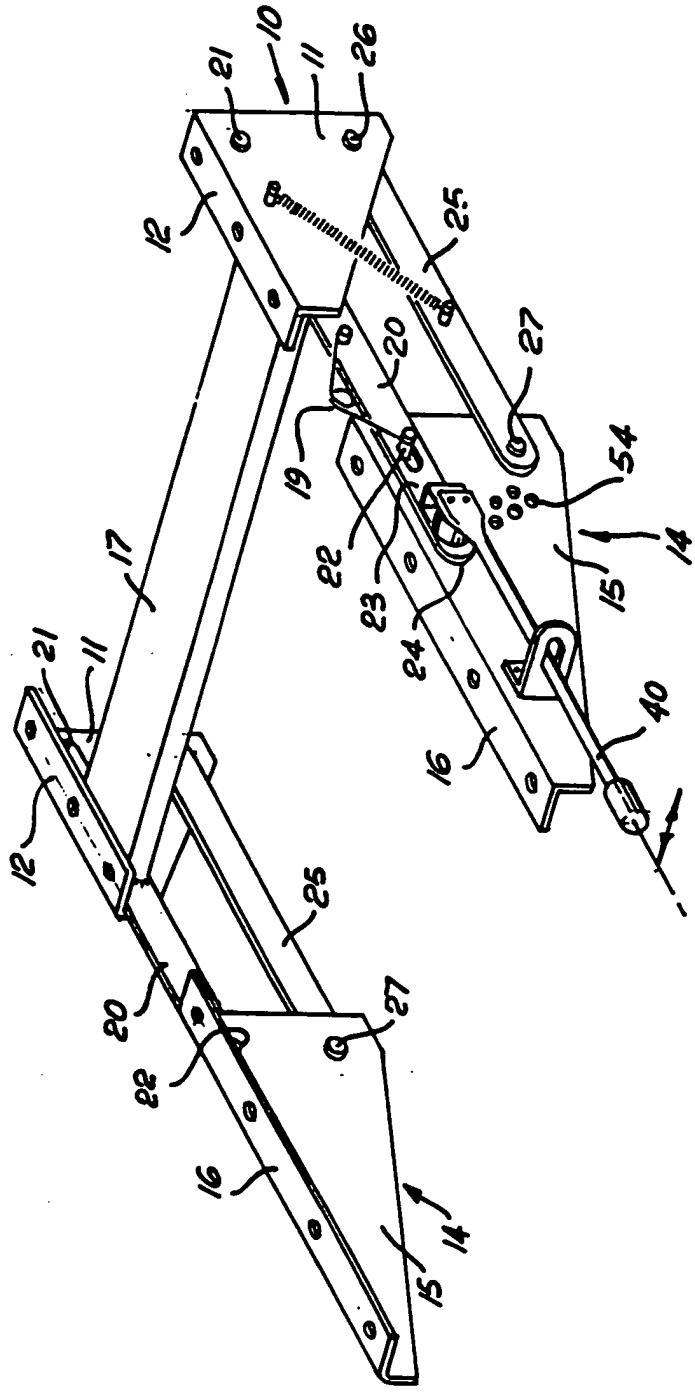

FIG. 9